

Jones Rob

From: Luke.D.Elliott@nwp01.usace.army.mil
Sent: Tuesday, September 30, 2003 6:59
To: rob.jones@ntsb.gov
Subject: Tillamook Bay Comparison

Rob,

Here is a analysis of Tillamook Bay and a comparison to the other projects in Oregon. I hope this helps to clarify what we mean by calling Tillamook "unique." I'm having trouble finding any NOAA records for wave action and such. Maybe NOAA would be a better source for that data. Sorry I'm not much help on that one.

If you need anything further from me, please let me know.

Thanks,
Luke

The description was prepared by Rod Moritz, hydraulic engineer, Portland District.

In it's present configuration, the entrance channel to Tillamook Bay does not require maintenance dredging.

The lack of present dredging requirement is due to the realized function of the two jetties at the bay's ocean entrance and the size of the authorized navigation channel of the entrance (18 ft and 200 ft wide). The north and south jetties are approximately 1,200 ft apart and provide sufficient hydraulic action during tidal exchange to prevent shoaling within the authorized entrance channel.

The last time that the ocean entrance channel to Tillamook Bay required dredging was in 1976. This was before the 8,000 ft South jetty was completed. Since completion of the Tillamook Bay south jetty in 1979, the entrance channel at Tillamook Bay has been "self-maintaining" due to tidal hydraulics.

A "self-maintaining" jettied entrance channel is desirable from an engineering viewpoint, in that maintenance dredging (continual life-cycle cost outlay) is not needed. Unfortunately, few jettied inlets are self maintaining.

Although this specific characteristic may make Tillamook Bay different when compared to other jettied inlets, all inlets are by their own general conditions, unique.

Regardless of location, every coastal inlet exhibits characteristics that are unique. No two inlets have the same shoal, jetty, or channel configuration. Consequently, no two inlets behave the same way with regard to wave action, currents, and shoaling. This necessitates that navigation should be addressed differently at each inlet. This is especially true on the Oregon Coast, there are 12 jettied coastal entrances subjected to a wide variation in tidal, wave, and local weather conditions. Mean tide range on the Oregon Coast is about 6.5 ft and ocean wave conditions can vary from swell to chop and from 2 to 30 ft wave heights. The location and shape of sand shoals and rock reefs offshore of an ocean inlet can affect incoming ocean waves and the tidal (estuarine) currents that are generated near the inlet. In addition, the currents associated with an inlet can interact with waves and vice versa to produce ever changing navigation conditions. Navigation conditions, therefore, are evaluated on a day-by-day basis with respect to weather conditions and a specific navigation entrance's unique characteristics.

In summary, each coastal inlet on the PAC NW coast should be considered unique both in terms of physical processes occurring at the inlet and the effects upon navigation. During any time, a given inlet can be subjected to ocean, tidal, and local weather conditions that result in a unique (unexpected) navigation condition at the inlet.